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| EXAMINER | |
|---|---|
| HARM, NICKOLAS R | |

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| 1791 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/553,177 | TADA ET AL. | |
| | Examiner | Art Unit | |
| | NICKOLAS HARM | 1791 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *13 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/13/2005, 2/3/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Summary*

1. Claims 1-20 are present and have been fully considered.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-20 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The term "normal temperature and normal pressure" in claims 1-5, 8, 11-12, and 14-19 is a relative term which renders the claim indefinite. The term "normal temperature and normal pressure" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The temperature at which the fluid must be in a gaseous state is, thus, rendered indefinite. For the purposes of this action, examiner will assume that "normal temperature and normal pressure" means a temperature of 70 degrees Fahrenheit and a pressure of 1 atmosphere.

b. The term "high pressure state" in claims 1, 6-9, 11-12, and 20 is a relative term which renders the claim indefinite. The term "high pressure state" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be

reasonably apprised of the scope of the invention. The pressure or range or pressures being claimed is rendered indefinite. For the purposes of this action, examiner will assume that “making the inside of the pressure resistant container in a high pressure state” simply means “increasing the pressure inside the container”.

c. The term "steeply released" in claim 10 is a relative term which renders the claim indefinite. The term "steeply released" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The manner in which the pressure is released is rendered indefinite. It should be noted that if applicant intended to claim "quickly released", this would also be an improper term of degree. For the purposes of this action, examiner will assume that applicant intended "steeply released" to mean "released".

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-3, 5-12, 14, 17, and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over EVANS et al. (US 5,501,761).

d. As to claim 1, EVANS teaches an adherend that is adhesion bonded to a substrate (col. 4, lines 59-65) that is removed by placing the substrate and adherend in a container that can handle a large increase in pressure, along with supercritical carbon-dioxide, increasing the pressure in the container, and finally removing the adherend and substrate from the container (col. 4, lines 33-41 and 65-67). It would have been obvious to one of ordinary skill in the art at the time of the invention that the container must have an air-tight seal in order to increase the pressure in the container without also increasing the pressure in the surrounding environment an equal amount, and that the pressure in the container must be released in order to remove the adherend and substrate from the pressurized container.

e. As to claim 2, EVANS teaches that the fluid added to the container is carbon dioxide (col. 4, lines 33-41).

f. As to claim 3, EVANS teaches that the fluid added to the container is carbon dioxide (col. 4, lines 33-41).

g. As to claim 5, EVANS discloses the claimed invention except for the step of sealing a release agent in the container. It would have been obvious to one

having ordinary skill in the art at the time the invention was made to seal a release agent in the container, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ. The motivation to add a release agent is that they are readily available in the art and their characteristics are well known.

h. As to claim 6, EVANS teaches that the pressure in the container can be raised to about 5000 psi (approximately 34 MPa) (col. 4, lines 41-45).

i. As to claim 7, EVANS teaches that the pressure in the container can be raised to about 5000 psi (approximately 34 MPa) (col. 4, lines 41-45).

j. As to claim 8, EVANS teaches that carbon dioxide in the container becomes supercritical in the pressurization step (col. 4, lines 37-41).

k. As to claim 9, EVANS teaches that the protective adhesive coating can be a polymer (col. 1, lines 14-17) which can be a synthetic resin, or, alternatively, would render obvious the use of a resin as the adhesive to one of ordinary skill in the art at the time of the invention. EVANS teaches that the temperature in the container is adjusted (col. 4, lines 43-45), but does not explicitly teach that the temperature is greater than 20 degrees Celsius below the glass transition temperature of the adhesive resin. However, the temperature to which the container is raised is a result-affected variable that depends on the adhesive resin being used. It would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the temperature in the container

to greater than 20 degrees Celsius below the glass transition temperature of the adhesive resin, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

l. As to claim 10, EVANS teaches that the substrate and adherend are removed from the container (col. 4, lines 65-67), but does not specifically teach that the pressure in the container is released. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the pressure in the container must be released in order to remove the adherend and substrate from the pressurized container.

m. As to claim 11, EVANS teaches an adherend that is adhesion bonded to a circuit board (col. 4, lines 59-67) that is removed by placing the circuit board and adherend in a container that can handle a large increase in pressure, along with supercritical carbon-dioxide, increasing the pressure in the container, and finally removing the circuit board and adherend from the container (col. 4, lines 33-41 and 65-67). It would have been obvious to one of ordinary skill in the art at the time of the invention that the container must have an air-tight seal in order to increase the pressure in the container without also increasing the pressure in the surrounding environment an equal amount, and that the pressure in the container must be released in order to remove the circuit board and adherend from the pressurized container.

n. As to claim 12, EVANS teaches an adherend that is adhesion bonded to a substrate (col. 4, lines 59-65) that is removed by placing the substrate and adherend in a container that can handle a large increase in pressure, along with supercritical carbon-dioxide, increasing the pressure in the container, and finally removing the adherend and substrate from the container (col. 4, lines 33-41 and 65-67). It would have been obvious to one of ordinary skill in the art at the time of the invention that the container must have an air-tight seal in order to increase the pressure in the container without also increasing the pressure in the surrounding environment an equal amount, and that the pressure in the container must be released in order to remove the adherend and substrate from the pressurized container.

o. As to claim 14, EVANS teaches that the fluid added to the container is carbon dioxide (col. 4, lines 33-41).

p. As to claim 17, EVANS discloses the claimed invention except for the step of sealing a release agent in the container. It would have been obvious to one having ordinary skill in the art at the time the invention was made to seal a release agent in the container, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ. The motivation to a release agent is that they are readily available in the art and their characteristics are well known.

q. As to claim 20, EVANS teaches that the pressure in the container can be raised to about 5000 psi (approximately 34 MPa) (col. 4, lines 41-45).

7. Claims 4, 15-16, and 18-19 rejected under 35 U.S.C. 103(a) as being unpatentable over EVANS et al., as applied to claims 1-3 above, in view of admitted prior art.

r. As to claim 4, EVANS discloses the claimed invention except for the step of sealing water in the container. It would have been obvious to one having ordinary skill in the art at the time the invention was made to seal water in the container along with the fluid, since applicant admits that it was known at the time of invention to physically and chemically remove organic polymer substances adhering to objects using water in a supercritical state under high pressure (spec: p. 4, line 34 - p. 5, line 3).

s. As to claim 15, EVANS discloses the claimed invention except for the step of sealing water in the container. It would have been obvious to one having ordinary skill in the art at the time the invention was made to seal water in the container along with the fluid, since applicant admits that it was known at the time of invention to physically and chemically remove organic polymer substances adhering to objects using water in a supercritical state under high pressure (spec: p. 4, line 34 - p. 5, line 3).

t. As to claim 16, EVANS discloses the claimed invention except for the step of sealing water in the container. It would have been obvious to one having ordinary skill in the art at the time the invention was made to seal water in the container along with the fluid, since applicant admits that it was known at the time of invention to physically and chemically remove organic polymer substances

adhering to objects using water in a supercritical state under high pressure (spec: p. 4, line 34 - p. 5, line 3).

u. As to claim 18, EVANS discloses the claimed invention except for the step of sealing a release agent in the container. It would have been obvious to one having ordinary skill in the art at the time the invention was made to seal a release agent in the container, as applicant admits that a number of release agents that can be used to release an adhered article are known in the art (spec: p. 14, lines 32-35).

v. As to claim 19, EVANS discloses the claimed invention except for the step of sealing a release agent in the container. It would have been obvious to one having ordinary skill in the art at the time the invention was made to seal a release agent in the container, as applicant admits that a number of release agents that can be used to release an adhered article are known in the art (spec: p. 14, lines 32-35).

8. Claim 13 rejected under 35 U.S.C. 103(a) as being unpatentable over EVANS et al., as applied to claim 12 above, in further view of SHOHI et al. (US 6,383,647).

w. As to claim 13, SHOHI teaches heating laminated glass with an interlayer film at 150 degrees Celsius (col. 2, lines 4-10), which is equivalent to firing the glass and interlayer film. While SHOHI doesn't teach firing the particular laminate glass interlayer film that results from the method of claim 12, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the interlayer film of SHOHI for the interlayer film of EVANS because

the two are analogous arts, the method of EVANS is not limited to one particular interlayer film, and it would have been obvious to one of ordinary skill in the art to try several different interlayer films in the method of EVANS, including the interlayer film of SHOHI.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. MULLEE (US 6,306,564 B1), SERAD et al. (US 5,462,973), and *V. Krukonis, "Processing of Polymers With Supercritical Fluids" 1985, pp.7-16, Polymer News, vol. 11* describe methods of separation using supercritical carbon dioxide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICKOLAS HARM whose telephone number is (571)270-7605. The examiner can normally be reached on Mon-Thurs, 7:30a-5:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip Tucker can be reached on (571)272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NICKOLAS HARM/
Examiner, Art Unit 1791

/Mark A Osele/
Primary Examiner, Art Unit 1791
July 20, 2009